

Application No.: 10/524,335
Amendment Dated: June 6, 2007
Reply to Office Action of: March 7, 2007

MAT-8666US

Remarks/Arguments:

The present invention relates to a power supply apparatus that is comprised of a plurality of capacitors. Furthermore, a detection unit inspects the plurality of capacitors by measuring their internal resistance.

On page 2 of the Office Action claims 2, 7, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai et al (JP 5-116571) in view of Tsukada (JP 8-094684). It is respectfully submitted, however, that the claims are patentable over the art of record for the reasons set forth below.

Sakai teaches a capacitor circuit that is used as an auxiliary power supply. Sakai's capacitor circuit is used to start the engine of a vehicle when battery capacity is found to be insufficient. Furthermore, Tsukada teaches a method for inspecting a capacitor. Tsukada's capacitor inspecting method measures the terminal voltage of the capacitor during charging and discharging. Also, an equivalent internal resistance of the capacitor is measured at the start of discharging.

Applicants' invention, as recited by claim 2, includes a feature which is neither disclosed nor suggested by the art of record, namely:

**...a microprocessor unit for interrupting charging or
discharging of the capacitor unit...**

**...measuring an internal resistance value of the
capacitor unit...**

Claim 2 relates to a microprocessor unit that interrupts the charging or discharging of a capacitor unit in order to measure the internal resistance of the capacitor unit. Furthermore, during this interruption, a voltage increase or decrease occurs and is measured in order to determine the internal resistance of the capacitor unit. This feature is found in the originally filed application at page 9, lines 20-24 and furthermore in figures 4A and 4B. No new matter has been added.

Sakai's abstract teaches an auxiliary power supply comprising a capacitor (*"utilizing the electric charge of a capacitor"*). Sakai's teachings are similar to Applicants' claim 1 where a capacitor unit is recited (*"a capacitor unit formed of a plurality of capacitors"*) and furthermore on page 5 line 22 of Applicants' specification (*"Capacitor unit 15 is formed of a plurality of capacitors"*). Sakai, however, does **not** teach a method for measuring the internal resistance of a capacitor. Therefore, Applicants' newly amended claim 2 recites a feature that is not disclosed by Sakai.

Tsukada's abstract teaches a method of measuring the internal resistance of a capacitor unit (*"An equivalent series resistance value"*). Tsukada's teachings are similar to Applicants' claim 2 where the measurement of an internal resistance is recited (*"measuring an internal resistance value"*) and furthermore on page 9 lines 21-22 of Applicants' specification (*"precisely measure the internal resistance value"*). Tsukada's abstract, however, teaches measuring the internal resistance of the capacitor unit when discharging has **started** (*"terminal voltage of the electrolytic capacitor when discharge is started"*).

Applicants' teachings are different than Tsukada, because of the addition of the microprocessor unit as recited in claim 2 (*"a microprocessor unit"*). Applicants' microprocessor unit provides the power supply apparatus with the ability to interrupt charging or discharging of the capacitor unit in order to measure the internal resistance. Measurement of an internal resistance value as recited in claim 2 is measured by either "a voltage decrease when charging/discharging is interrupted by the microprocessor" or "a voltage increase when charging/discharging is restarted after the interruption by the microprocessor." The interruption of charging or discharging of the capacitor unit can be seen in Applicants' figures 4A and 4B.

It is because Applicants include the feature of *"a microprocessor unit for interrupting charging or discharging of the capacitor unit"* that the following advantages are achieved. An advantage is the ability to measure internal resistance of the capacitor unit multiple times which ensures data integrity. Accordingly, for the reasons set forth above, claim 2 is patentable over the art of record.

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Claims 7, 11 and 13 include all the features of claim 4 from which they depend. Thus, claims 7, 11 and 13 are also patentable over the art of record for the reasons set forth above.

New dependent claim 15 has been added to the application. This claim recites a power supply apparatus for supplying electric power to the brakes of a vehicle. This claim is patentable by virtue of its dependency on allowable claim 2.

... power supply apparatus is for a vehicle and is for use with a battery, wherein said battery is for supplying electric power to a brake of the vehicle.

Support for this claim can be found in the specification as originally filed at page 4, lines 13-14. No new matter has been added.

New dependent claim 16 has been added to the application. This claim recites an electronic controller for controlling the brakes of a vehicle. This claim is patentable by virtue of its dependency on allowable claim 2.

an electronic controller for outputting information for controlling braking of the vehicle...

Support for this claim can be found in the specification as originally filed at page 4, lines 17-20. No new matter has been added.

New dependent claim 17 has been added to the application. This claim recites a detection unit that detects abnormalities in a capacitor unit. This claim is patentable by virtue of its dependency on allowable claim 2.

...detection unit detects an abnormality in the capacitor unit...

Support for this claim can be found in the specification as originally filed at page 6, lines 8-11. No new matter has been added.

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MAT-8666US

In view of the amendments and arguments set forth above, the above-identified application is in the condition for allowance which action is respectfully requested.

Respectfully submitted,

RatnerPrestia



Lawrence E. Ashery, Reg. No. 34,515
Attorney for Applicants

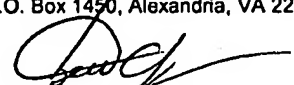
LEA/bj

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P.O. Box 980
Valley Forge, PA 19482
(610) 407-0700

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Beth Johnson

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